Drywall Construction

What is Drywall Construction?

Conventional Walls are constructed by the use of brick and mortar, which are then plastered from both the sides. Drywall construction is the new age technology, where pre manufactured boards of different materials are mounted on a GI framework.

Drywall construction reduces the cost of the project, enhances productivity both in terms of time and manpower and minimizes or practically eliminates wastage, debris and water and so is ecologically more responsible and green.

Why is it better than conventional brick and mortar construction?

Weight on structure:

A brick and mortar 6" thick wall with plaster on both the sides weighs roughly 350 kg/m^2, whereas a dry wall in Gypsum board weighs around 30 kg/m^2 and Fibre Cement Board weighs around 55 kg/m^2. Thus the dead weight on the structure is reduced substantially. If the structure is designed with this in mind, it would lead to a saving of 15 – 20% in the cost of the structure.

Speed of construction:

A brick and mortar wall requires more labour. A skilled mason makes roughly 1.5m^2/day of wall with plaster on both the sides, whereas in case of Drywall one skilled worker can install 15m^2 /day of work.

Minimal wastage / debris:

Quality of bricks is a regular issue. In case of brick work, 20-25% of the cost is lost in breakage, wastage of mortar etc. In case of plastering the wastage is from 15-20%. In case of drywalls, the loss is practically nil. If the usage of the panels is properly planned the wastage can be reduced to 5-7% of the material. This is environmentally sustainable and can garner green points. There is no debris created in the process, so disposal is not an issue.

No curing time:

A brick wall after being made and plastered has a curing time of a minimum of 7 days, which can take longer. In case of drywall, after finishing the touch dry time is a matter of hours. The wall is ready to paint in 48 hours after installation.

Use of water:

Drywall installation requires practically no water. It is a green option in terms of usage of water.

No plastering / finishing required:

Drywalls require no plastering. The installed and finished joints give a finish, like that of a good plastered wall and is ready to paint.

Green Features:

- Usage of Sand / Crushed stone: Drywalls do not require either of these, so you are not at the mercy of the Sand mafia. Its usage also avoids the damage to the environment.
- Its light weight requires a much lighter structure, requiring less steel, cement and stone metal.
- Does not create debris / wastage. Disposal of these no longer becomes an issue.
- Requires hardly any water, leading to major savings in water and creates a cleaner working environment.

Types of Drywall Constructions:

For External Walls & Wet Areas:

The best choices are Fibre Cement Boards and Cementatious Panels. These can withstand water, rain and sun.

For Internal Walls the choices are:

- Fibre Cement Boards
- Calcium Silicate Boards
- Calcium Sulphate Boards
- Calcium Phosphate Blocks

Applications:

Acoustic walls:

Glasswool or Rockwool slabs are added between the two panels of the wall. We can get a NRC value from 40 – 45 dB depending on the materials used.

Fire rated walls:

All the above boards are available in fire rated grades with a fire rating ranging from 30 minutes to 240 minutes. The Calcium Phosphate blocks are available in 180 minutes rating.

High rise / large height walls:

It is possible to have walls upto 10m height. Wall thickness is higher as the height increases and wider GI sections are required.

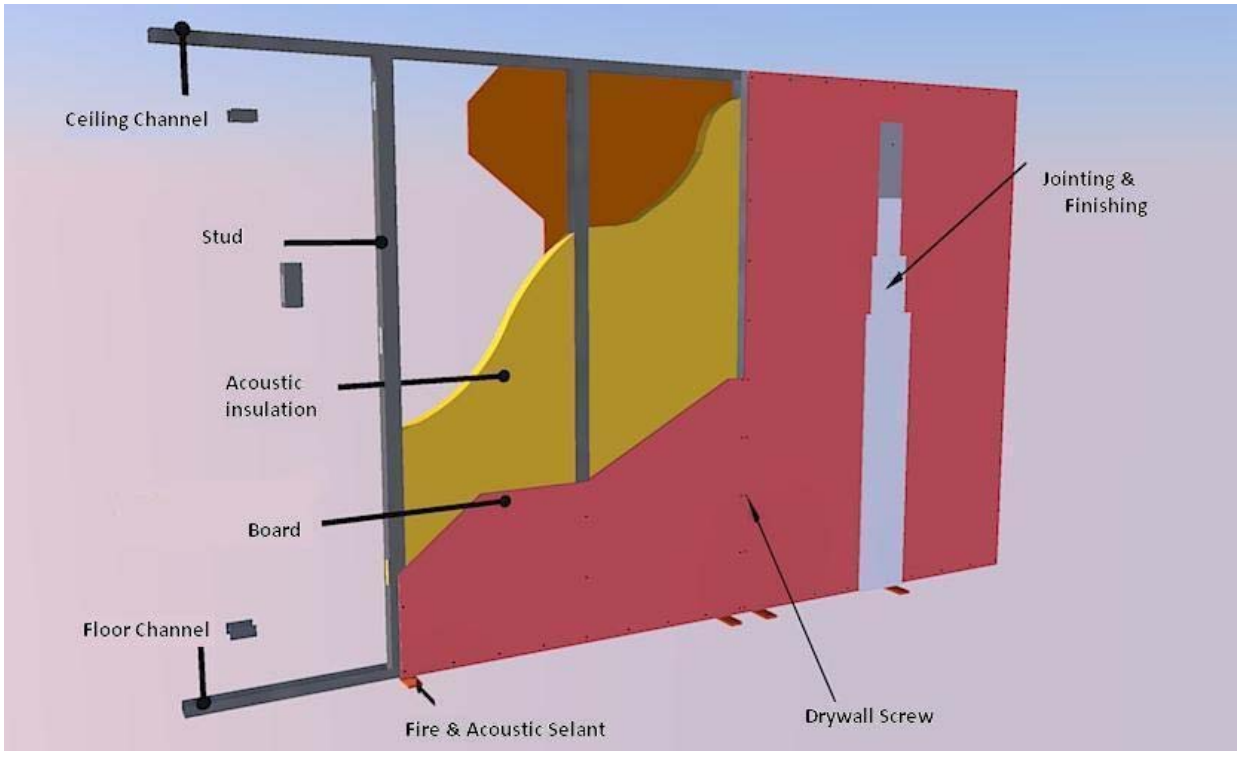
Components of a drywall:

- Boards are available in thicknesses of 8, 10, 12, 15 & 18mm.
  They are available in sizes of 6'X4' and 8'X4'.
- Steel Structure – In case of concrete structures, we require floor channels, studs, and other members for erecting a wall. In case where a concrete structure is not present, we need to have steel frame structure, followed by floor channels and studs.
- Jointing and finishing components, such as jointing compound, reinforcement tape etc.

Finishing of Drywalls:

- Paints. Except for Fibre Cement Boards, where water based paints are necessary, we can use all paints and finishes, just like a normal wall.
- Wall Papers.

Installation of drywalls:



Steel framing:

A GI section structure is installed to provide the back up for boards, it provides the strength and framework for the drywall. In case load bearing service is required, by the wall, such as TV, wall mounted toilets, wash basins etc. reinforcement is planned before hand and introduced at this stage.

Board Installation:

Boards on one side are screwed on to the GI sections of the structure. The service lines are then incorporated in the structure. The intermediate space is then filled with glass wool / rock wool if required. The boards are then installed on the other side.

Jointing and Finishing:

The joints are then finished to provide a smooth continuous surface. To ensure that the joints don't develop cracks, these joints are reinforced with a fibre tape which is then used for reinforcing the jointing and finishing compound to avoid cracks.

Cut outs for service lines:

Service lines such as electricity, data, phone, water supply and sewerage can be incorporated in the drywalls, between the panels and the outlets can be accessed through cutouts in the panels, which can then be finished to look elegant.

Doors and Windows:

These are also planned so that the openings can be reinforced to be stronger. All conventional doors and windows can be incorporated in the design.

Services in drywalls:

All services to be provided need to be planned before hand. Unlike conventional walls, these walls cannot be chased.

Electric Wiring, Phone, Security and Data cabling:

Concealed electrical wiring is possible. We need to have the electrical plan and wiring before panel installations.

Water and sewerage lines:

These also have to planned before hand, to be able to conceal them. They pass through the structure and between the panels.

A/c pipes and ducts:

These too have to be planned in advance.

Mounting on Drywalls:

Frames, Lightweight Light fixtures, Electric Switchboard etc:

All lightweight loads can be mounted on drywalls with special fixtures and can be done even after the wall is constructed.

TV, a/c outlets, Wash basins and toilet fittings:

These are usually heavier and the structure in the dry wall needs to be reinforced, with special structural members. Thus any such installations on walls, needs to be planned beforehand.

Economy: Is Drywall Economical?

Yes, it is economical, if used with proper planning and is considered right from the inception stage of the project. The following factors help us define its economics:

- Savings in terms of reduced cost of columns and beams of the building. A large part of the cost of the walls is covered by the savings under this head.
- Savings in terms of improved productivity of labour. The labour cost of these walls is much less than the conventional walls.
- Increased speed of construction, so project completion is faster and are saleable faster too.
- Less space is required by drywalls, so the carpet area is enhanced, so is the marketable area.
- No curing and plastering is required. The Green value of the building is substantially enhanced.